

CLAIMS

What is claimed is:

1. A positioning system, comprising:
 - 5 a command signal generator structured to transmit a command signal;
 - a subject module structured to receive the command signal and emit a subject signal responsive thereto;
 - a plurality of sensor modules arrayed in a defined three-dimensional space and structured to detect the subject signal;
 - 10 a plurality of counters corresponding to the plurality of sensors, each of said counters configured to count an increment relating to reception of the subject signal by the corresponding sensor module;
 - a comparator configured to compare the plurality of increments and generate a plurality of counter differential values; and
 - 15 a correlator configured to correlate the plurality of counter differential values to determine a subject location in the defined space.
2. The system of claim 1, further comprising:
 - 20 a calibration module disposed in a predetermined location in the defined three-dimensional space relative to the plurality of sensor modules and structured to transmit a calibration signal.
3. The system of claim 1 wherein the counter has an increment of about 10^{-7} seconds.
- 25 4. The system of claim 1 wherein the counter has an increment of about 10^{-8} seconds.
5. The system of claim 1 wherein the counter has an increment of about 10^{-9} seconds.
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6. The system of claim 1, further comprising:
a plurality of subject modules, each of said subject modules having a unique transmission identity.
- 5 7. The system of claim 1 wherein the subject module further includes a memory.
8. The system of claim 1 wherein the correlator is configured to determine a subject location in the defined space in real time.
- 10 9. A method for locating a subject, comprising:
transmitting a signal to a subject unit located within a defined three-dimensional space;
transmitting a signal to slave units located within the defined three-dimensional space, each slave unit configured to start a 1 GHz counter from a counter start value;
15 transmitting a subject signal from the subject unit located within a defined three-dimensional space;
stopping said counters of said slave units to define counter stop values;
20 determining net counter values for each slave unit;
comparing the net counter values to determine counter difference values; and
correlating said counter difference values to determine a subject unit location in the three-dimensional space.
- 25 10. The method of claim 9 wherein correlating comprises correlating said counter difference values to determine a subject unit location in three dimensions.
11. The method of claim 9 wherein correlating comprises correlating said counter difference values to determine a subject unit location to within three feet.
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12. The method of claim 9 wherein correlating comprises correlating said counter difference values to determine a subject unit location to within one foot.

13. The method of claim 9 wherein correlating comprises said correlating
5 counter difference values to determine a subject unit location in the three-dimensional space in real time.

14. The method of claim 9, further comprising:
receiving data from said subject unit.
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15. The method of claim 9, further comprising:
transmitting a calibration signal to the slave units from a calibration unit
located at a preselected position within the defined three-dimensional space;
stopping said counters of said slave units to define calibration counter stop
15 values;
determining net calibration counter values for each slave unit;
comparing the net calibration counter values to determine calibration
difference values;
correlating said counter difference values to determine the calibration unit
20 location in the three-dimensional space; and
comparing the determined calibration unit location to a reference value for
the preselected position of the calibration unit.